#### 3. SITE DESCRIPTIONS

## 3.1 CHINCOTEAGUE RIDGE/SWALES STUDY SITE

#### 3.1.1 Oualitative Site Description

Physical description. This WIA (Figure 6) is composed of a series of low upland ridges and shallow swales covering approximately 13 ha. These ridges and swales run roughly northeast to southwest. Some of the swales have open water, some have shrub communities, and some have emergent vegetation. Historical photography shows that the swale wetland areas at the northern and eastern end of the site were once connected to estuarine emergent wetlands. This connection has been blocked-off by the construction of the road, borrow pit, and filled areas in the Oyster Point development to the north and northeast. To the south and southwest the ridges and swales run unimpeded until they strike the so-called jeep trail and jeep trail ditch which runs east and west near the high school.

Definitions. The WIA consists of the site as outlined by EPA. The sub-watershed consists of the various ridges which run from the northeast to the southwest. The basin for this site extends to the jeep trail ditch which lies approximately 500 m to the south of the site. Some surface water leaves the site via the swales and drains into the jeep trail ditch (but only during very wet periods) and then drains westward into Chincoteague Bay. The culverted outlet of the jeep trail canal allows some intrusion of saltwater during periods of dry weather and high tides. Salinity measurements indicate that tidal influences extend only a short distance northeastward into the swales.

Qualitative vegetation description. Vegetation on this site breaks down into basically two types - the wetland dominated swales and the pine forest dominated ridges. The swale wetlands which lie to the north and northeast side of the site are dominated by emergent vegetation largely dictated by the former estuarine characteristics of the site. This includes Spartina patens, Distichlis spicata, Scirpus olneyi, and the seashore mallow (Kosteletzkya virginica). Further south these swales are dominated by Iva and other shrubs including Myrica. The swales which lie on the southwest and western side of the site are dominated by somewhat different plants such as Hibiscus, Polygonum (which dominates many of the sites), Kosteletzkya, the

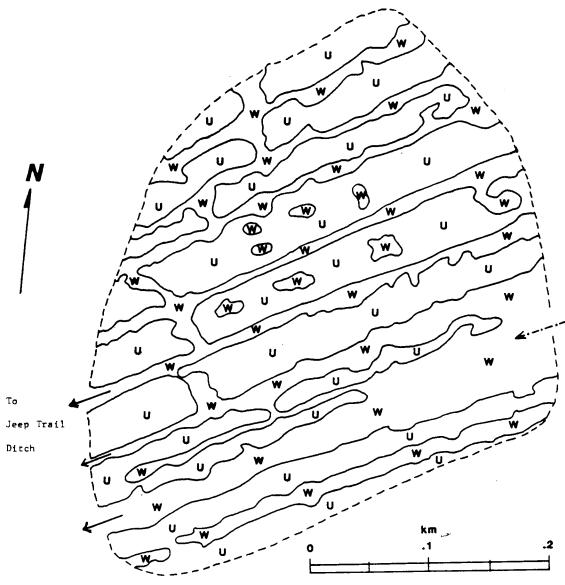


Figure 6. Map of Chincoteague Ridge/Swales WIA showing wetland (w) and upland (u) areas. Major outlets are indicated by solid arrows which depict the direction of water movement from the site. Broken arrow indicates an ephemeral inlet from a borrow pit to the northeast.

swamp rose, <u>Rosa palustris</u>, and a variety of other primarily freshwater wetland plants. There is no <u>S. patens</u> nor <u>Distichlis</u>. In other words, the wetlands at this site appear to fall into two groups - those to the north and northeast which were formerly connected closely to the emergent estuarine wetlands to the northeast and those to the west and southwest which apparently had a much more tenuous connection and were much further removed from estuarine influence. Along the northern edge of this site

there is a great deal of <u>Phragmites</u> associated with the disruption which has occurred around the Oyster Point development and the borrow pit. The ridges, which are considered upland, are dominated by loblolly pine (<u>Pinus taeda</u>), tangles of poison ivy (<u>Toxicodendron radicans</u>), and greenbriers (<u>Smilax spp.</u>). There are also scattered shrubs such as wax myrtle (<u>Myrica cerifera</u>).

Wetland classification. The ridge areas are upland. The swales are made up of several classifications. The shrub areas are classified as palustrine scrub/shrub. The areas of the swales (north and northeast end of site) which were formerly estuarine can be classified either as estuarine or palustrine scrub/shrub, depending upon vegetation type. We recommend palustrine since the vegetation appears to be changing to this type. Similarly, areas of emergent vegetation can be classified as palustrine or estuarine.

<u>Substrates, water salinity.</u> Soils underlying the site are composed of sand or sandy loam with a thin layer of organic matter (10 cm). Ridge soils may also contain some loam along with sand. Salinities (during average conditions) ranged from 3-5 ppt. at the south end of the swales to 0.5-1.0 at the north end of the site.

Wildlife use. The more open ends of the swales (at their northeastern ends) appear to be moderately to heavily used by wading birds and migratory waterfowl. The narrow ends of the swales, particularly where dominated by shrubs, were not observed to be used by waterfowl during the study period. There was ample evidence of use by raccoons and other small and medium-sized mammals. There were few indications of fish utilization, indicating that these areas may occasionally dry out completely and that their connection with areas of repopulation such as the estuary are far removed.

Hydrologic functions. In general, surface drainage is to the south and southwest to the jeep trail and eventually to Chincoteague Bay, but only during very wet conditions. The former drainage connection to the north and northeast has been blocked by the Oyster Point development. In fact, during periods of heavy rain there appears to be a small amount of sheet flow from the borrow pit across the road and into the northern part of this site. During dry periods much of the drainage at this site occurs vertically into the near-surface water table aquifer system, indicating a high ground water recharge potential. Because of the numerous swales, this site also appears to have a high potential for both flood water storage and nutrient retention.

### 3.1.2 Adamus and Stockwell Evaluation: Chincoteague Ridge/Swales

## Summary Sheet D

This form is the appropriate place for recording the ratings that result from use of the interpretation procedures and keys in Sections 2.1.2, and 2.2.2. As each analysis is completed, enter its rating (high,moderate, or low; or A, B, or C) in the relevant box until all boxes for functions of interest are filled.

Begin by labeling the context of the analysis (pre- or post- construction, with or without mitigation, name of basin and WIA). Then enter the data, using the numbered footnotes to help locate the associated analyses. For the evaluation of each function's Effectiveness, enter whichever rating is higher--That for the basin or that for the WIA. The evaluation of the impact vector is optional.

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EVALUATION TIME FRAME (PRE	POSTI		MITIGATION PLAN#		
FUNCTION	EFFECTIVENESS'	OPPORTUNITY	FUNCTIONAL RATING	SIGNIFICANCE <sup>3</sup>	FUNCTIONAL SIGNIFICANCE
GROUND WATER RECHARGE	moderate	moderate	moderate	moderate	moderate
GROUND WATER DISCHARGE	moderate		moderate	moderate	moderate
FLOOD STORAGE	high	low	moderate	high	high
SHORELINE ANCHORING*	hian	1 ow	moderate	moderate	moderate
SEDIMENT TRAPPING	moderate	moderate	moderate	hian	hiah
NUTRIENT RETENTION LONG-TERM" SEASONAL"	moderate high	high high	high high	high	very high
FOOD CHAIN SUPPORT DOWNSTREAM <sup>12</sup> IN-BASIN <sup>13</sup>	moderate moderate		moderate moderate	moderate	moderate moderate
FISHERY HABITAT WARMWATER'* COLDWATER'* COLDW.RIVERINE'* ANADROMOUS RIV.	low		low	moderate	low
WILDLIFE HABITAT GENERAL DIVERSITY** WATERFOWL GP." 1 WATERFOWL GP." 2 SPECIES** WOOD DUCK SPECIES** SPECIES**	high Breeding NA moderate	Winter Moderate moderate	high moderate moderate moderate	_moderate	high moderate moderate moderate
ACTIVE RECREATION** SWIMMING BOAT LAUNCHING POWER BOATING CANOEING SAILING	low low low low		low low low low low	moderate	low low low low low
PASSIVE RECREATION  AND HERITAGE*  IMPACT VECTOR RATING*				moderate	moderate

**FOOTNOTES** 

These entries will be based on analyses in the following parts of Volume II (numbers correspond to footnotes above):

<sup>1-</sup>Forms A, Ai (p. 6, 51); <sup>2</sup>-Section 2.1.2.2. (p. 97); <sup>3</sup>-Forms B, Bi (p. 38, 54); <sup>4</sup>-Section 2.1.2.2. (p. 97); <sup>5</sup>-Interpretation key in Section 2.1.2.1. p. 57; <sup>6</sup>-p. 59; <sup>7</sup>-p. 60; <sup>8</sup>-p. 62; <sup>9</sup>-p. 64; <sup>10</sup>-p. 67; <sup>11</sup>-p. 67; <sup>12</sup>-p. 69; <sup>13</sup>-p. 71; <sup>14</sup>-p. 73; <sup>15</sup>-p. 75; <sup>16</sup>-p. 79; <sup>17</sup>-p. 80; <sup>18</sup>-p. 84; <sup>19</sup>-p. 91; <sup>20</sup>-p. 92; <sup>21</sup>-p. 93.

### Chincoteague Ridge/Swales

#### Response Sheet A1

THRESHOLD ANALYSIS: FUNCTIONAL OPPORTUNITY AND EFFECTIVENESS

This sheet is the appropriate place for recording the responses to corresponding questions in Form A. A "yes" (Y). or "no" (N) response must be circled for all parts of each question, even when the response seems obvious. This response sheet has two major columns—"WIA" and "BASIN", and within each of these, three subcolumns entitled "\(\tilde{\pi}\)", "\(\tilde{\mathbb{W}}\)", and "D", which address, when relevent, the seasonal changes in some of the predictors, as follows:

itolumn responses are those addressing
either (a) the average annual condition, or
(b) the condition intermediate between the
wettest and driest annual conditions (e.g.,
late June in most Prairie pothole wetlands),
or (c) the condition of maximum annual
standing crop of wetland plants, or (d) if
tidal, the average daily mid-tide condition.

W column responses are those addressing what the area would look like (a) during the wettest time of an average year, or (b) if the area is tidal, what it would look like during an average daily high tide (flooded) condition.

O column responses are those addressing what the area would look like during either the driest time of the year (questions pertaining to hydrology) or if the question pertains to vegetation, then during the dormant time of the year. If the area is tidal, "O" refers to its daily low tide (exposed) condition.

for example, question 2.1.1 should first be asked and answered in the context of the WIA's (wetland impact area's) average condition, then in terms of its wettest condition, then the basin's average condition, and finally the basin's wettest condition. This should then be repeated for question 2.1.2. Because no Y/N choice is given in either "D" column, the area's dry or dormant condition need not be evaluated for this question. Similarly, some questions will require responses only for the WIA or basin, but not both.

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Chincoteague Ridge/Swales

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Chincoteague Ridge/Swales

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* N/A (Not Applicable) used f	or 17
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73.2 Y We have no measurements.	
74.2 Y N 75.1 Y N	
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# Chincoteague Ridge/Swales

# Response Sheet B1

THRESHOLD ANALYSIS: SIGNIFICANCE

This sheet is the appropriate place for recording the responses to the corresponding questions in Form B. Circle Y (yes) or N (no), being careful to note that the order of Y and N below frequently reverses.

General 1.1 (D) Y See Comment form 1.2 (D) Y 1.3 (D) Y 1.4 (D) Y 1.5 (D) Y 1.6 (D) Y 2. Y (D) See Comment form	Nutrient Retention 37. Y N 38. Y N 39. ON 40. ON 41. ON 41. ON 42. Ny see comment form
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Form "A" Comme	nts (Chincoteague Ridge/Swales)
1.1	Slight drainage from northern borrow pit during high water periods
1.1	(Basin) Drainage into jeep trail ditch occurs from High School East borrow pit during normal and wet periods
1.2	(Basin) Jeep trail is tidal from Chincoteague Bay eastward for at least 1 $\ensuremath{\text{km}}$
1.3	(Basin) Under dry and normal conditions tidal waves may extend toward site through swale accesses but does not reach it
1.3.1	"Inlet" from drainage basin during wet periods
5.2	See site map (Figure 6) and definitions for this site
6.1-6.2	We are considering only the swale areas as wetlands (pine ridges are not wetlands)
7	Predictor not used
8	Sub-watershed = forest ridges. Within WIA, ridges along swales contiguous with jeep trail ditch and developed area along jeep trail ditch
9	Predictor not used
22.1	Although site is predominantly forested, there are extensive areas of emergent wetlands within the site
23.1-23.9	Forest soils (which predominate in area) are sands; swale areas have sandy soil bottoms with a surface layer of organic material
26.1-26.11	Refers only to swales
26.1-26.11	(Basin) While much of the wetland areas in this area are intermittently exposed, the jeep trail canal is both permanent and also tidal near Chincoteague Bay
34	This refers to swales and excludes ridge areas which are not considered wetlands

36	Estimated with no measurements; shallow swale waters are probably poorly oxygenated due to excess organic matter on the bottom
39.5	Filled area (dike) has prevented movement of fishes from estuarine creeks
39.6	Jeep trail canal
41.1	Answers refer to wetland areas (swales)
43	The only sheet flow into the site occurs during flooding periods when small amounts of water flow from the borrow pit south across the dike
44	Considering vegetated areas along Chincoteague Bay
50	Evidence of duck use and feeding on species such as Polygonum, Scirpus, etc.
51	Answered "no" because no open water with a depth greater than 6 ft within WIA
52.2	High areas have <u>Spartina patens, Polygonum, Iva.</u> There are no low areas
64	Bottom of swales may not always be above 5 pm

Form "B" Comm East)	ents (Chincoteague Ridge/Swales and High School
1	Answers depend upon whether potential future development takes place. Future development not taken into consideration unless imminent (present development underway)
2	Answered relative to specific impact areas, not general area
5-7	Water supply from mainland. Human use considered only (e.g., aspect of natural recharge to maintain vegetation not considered)
8	Chincoteague Ridge/Swale Site is significantly larger than the High School East site; of more importance to the island's aquifer
12 + 14	Seems to be asking same question only for fish and wildlife only, not other functions
15	Judged to be not economically feasible
18	Probably - but need to consult predicted storm surge maps for Chincoteague
23-29	All wetlands ranked as low opportunity
30	High quality water interpreted to mean classified as potable water source
32	Outlet pipe of jeep trail ditch (basin of both sites) could require maintenance clearing
3,11,16, 17,30,54	Official designations unknown. Answered 17,30,54 tentatively based on impression (followed with question mark)
10	Answers necessarily a matter of opinion
15,22,26, 42,53,55,60	Net experience with small, unincorporated communities such as Chincoteague show that wetland functions tend to be undervalued or ignored, and not replaced if compromised. The lack of comprehensive planning for the island suggests that methods such as zoning or transferring rights away from the most important wetlands will not be undertaken
76	Chincoteague Ridge/Swales site has high potential for out of classroom learning (school located next door)